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EVISCERATION OF THE EYEBALL.

Mule's Operation—Insertion of Artificial Vitreous
(Glass Ball).

By L. WEBSTER FOX, M.D.,

Professor of Ophthalmology in the Medico-Chirurgical College, Philadelphia.

THIRD PAPER.



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At the last meeting of the American Medical Association, Section of Ophthalmology, May 7-10, 1895, I called the attention of the profession to this operation. Since then I have added a number of operations to my list, and I shall in this contribution give a brief resume of the present condition of those cases previously described, and also enter more fully into detail upon the recent operations, as well as give my experience upon the outcome of certain modifications in the surgical technique.

Case 3. Operation performed Oct. 26, 1894, on a young woman, a patient of Dr. Frutchev. She had been wearing an artificial eye over a blind eye for several years. The result was that she had sympathetic irritation and pain in the partially atrophied eye-ball. The operation was carried out as described in the above-mentioned paper. Upon removing the cicatricial cornea, I found the scleral cavity filled with a bony mass, round, and shaped exactly like a small acorn. This growth of bone was also a very important factor in the causation of pain. The bone was growing larger, and the sclerotic coat was restricting its growth, hence the pain. The bone was removed without difficulty and given to Professor Laplace for microscopic examination. The patient had no untoward symptoms; the temperature ran up to 101 the first day after the operation, and on the third to one degree above the normal line, but no visible change followed—the patient leaving the hospital in twelve days. In this case there was no reaction, no swelling of the eyelids, and the conjunctiva but very slightly che-

motie. The artificial eye stands out on a level with its neighbor. The movement is perfect, falling but little short of normal. At the end of one year there are no untoward symptoms whatever, and the artificial eye, from a cosmetic point, is a perfect success.

Case 4. A young woman of Philadelphia, aged twenty-two, admitted to the hospital on account of an irritable left eye, staphyloma of the cornea; eye useless. Owing to the repulsive appearance of the eye-ball, the patient desired its removal, so as to replace it with an artificial eye. The operation was performed January 25, 1895, under the same antiseptic precautions, as in all of these operations with little or no reaction, no swelling of the eyelids and only a suspicion of edema of the eyelids. Owing to a difficulty in matching the right eye in color, the artificial eye is not quite large enough. The movement is exceedingly good, and the patient has been working in a mill ever since the adjustment of the eye without any inconvenience whatever.

Case 5. Male, age thirty-three, from Wilmington, Delaware. In September, 1884, was struck in the left eye by a brass spring, puncturing the sclerotic, from which exuded a bead of vitreous. When brought to the hospital the vitreous was snipped off and the scleral wound was closed by stitching the conjunctiva over it. The eye became involved in a general uveitis, with a result of a total loss of vision and slight shrinking of the eyeball. I examined this patient about once a year, and during the ten years past no inflammatory change has taken

* Third paper.

place in the eyeball. The hyperopia was fully corrected in the right eye and glasses worn. On January 13, 1892, the following note was made in my case book: "The sclerotic scar visible through the conjunctiva; no perception of light; total posterior synechiae; lens, opaque. Tension 1, eyeball manifestly shrunken; no pain or irritation. On December 26, 1894, the patient came to see me on account of considerable congestion of the left eye, and slight pain on pressure. The result of the examination revealed sympathetic irritation. The patient was placed on active mercurial treatment,



Fig. 1.

which reduced the active symptoms; both eyes became perfectly quiet. Having had this warning, I advised the evisceration operation, which was performed February 2, 1895, at the Medico-Chirurgical Hospital. The operation was witnessed by Drs. Risley and Carpenter. The case made a very good recovery, with little or no reaction, the only defect is a slight gaping of the conjunctiva and sclera, owing to the central stitches of both conjunctiva and sclera giving way and allowing the glass globe to become visible. A little less than one-half of the glass ball remained exposed until August 25, 1895, when it came out, leaving a cavity, which closed

up in ten days so completely that nothing remained of this space. The artificial eye was replaced at the end of four days after the globe came out, and no untoward symptoms developed. It was interesting to watch the posterior part of the scleral cavity during the time that the glass globe was in place. The sclerotic coat remained perfectly white and clean—no new formed blood-vessels, nor any deposit of neoplasm was made between the globe and sclerotic coat. There evidently was a contraction of the tissues posterior to the equator of the glass globe, and this contraction caused the expulsion of the glass ball. The photograph, No. 5, was taken before the expulsion of the glass ball. The artificial eye was perfect in all its perimetric movements and there was no enophthalmus. The remains of the sclerotic coat was not removed, and now makes a fairly satisfactory substitute for the glass ball. The movement of the eye is restricted and enophthalmus marked. The case is now one of evisceration simple.

Case 6. Child, female, age 11 years, from Milford Mills, Chester Co., Pa. Staphyloma of the cornea of the left eye, due to an ulcer of the cornea, three years previously; since then the cornea has developed into a very large staphyloma. The operation was performed May 3, 1895. For ten days the case progressed most favorably, no swelling of eyelids, nor pain. It was then discovered that the stitches in the conjunctiva were giving way, and the glass ball was making its appearance, proving that the stitches in the sclerotic had evidently been absorbed; in a week the glass ball came out and the cavity closed, and made a very satisfactory cavity for an artificial eye, which the child is wearing without inconvenience. There is some enophthalmus, but not nearly so great had the whole of the sclerotic coat been removed. This was the second case in which the catgut had been substituted for the silk suture, and the result might be called a failure.

Case 7. A young woman, age 20, of Philadelphia. This patient was admitted to the wards of the hospital June 7, 1894, for intense hyperesthesia of the retina. The patient suffered intense agony, the hyperes-

thesia extending over the face, down the neck and between the scapula to the dorsal region. The combined professional skill of Professors Anders and Burr availed but little, all remedies proved useless—the intense pain could only be controlled by hypnotics. Suddenly a cessation in the general symptoms became manifest, and a severe iritis developed in the right eye. The line of treatment was directed towards the inflammation of the iris. In spite of all treatment the pupil closed, and vision, even to light perception, disappeared. The left eye during all this time never showed any sympathetic irritation, only an outbreak of retinitis. Having tried every remedy at my command, even to cauterizing over the fifth cervical ganglion, which was suggested by my friend, Dr. Shakespeare, and all to no avail, and, noticing a gradual shrinking of the eyeball, I performed an iridectomy, March 18, 1895. This operation brought temporary relief, and there is no doubt that some cessation was gained in the intense pain in both eyes. The patient gradually improved until July 1, 1895, when the eye symptoms and slight pressure upon the fifth cervical ganglion became as painful as ever. These symptoms, as well as pain in the now blind and shrunken eye, gradually became so intense that I determined to remove the blind eye. On July 15, 1895, Mule's operation was performed, and, strange to relate, almost every symptom of pain disappeared within the week. The orbit took on little or no swelling, and the patient is wearing an artificial eye in comfort. I have merely given a brief outline of this case—her suffering at times was beyond belief, and it would have been a blessing had death relieved her when the paroxysms of pain were at their height. She was fed for three months by rectal enemata, the stomach being unable to retain any food at all; even the accumulation of mucus would cause intense retching. Whether it was a coincident that the disease had reached its culmination at the time of the Mule's operation, or whether the removal of inflammatory focus in the right eye brought about this change for the better, I am unable to say, but the patient has made a perfect re-

covery, and while still muscularly weak, is able to perform light household work. Silk sutures were used in stitching the sclerotic and conjunctiva, and the parts remained intact.

Case 8. Solomon Moore, negro, of Germantown, presents some interesting features. Several years ago he had a cataract removed from each eye by capable surgeons, yet both pupils closed and blindness followed. Upon examination with the ophthalmoscope, I found that he had good perception of light in one eye, the other was blind. This information was elicited by standing the patient with his back to the gas jet, then with the mirror throwing the



Fig. 2.

light into his eyes from various directions, he was able to tell me from which quarter the light came, and I was convinced that if an artificial pupil was made vision might be restored to them. I performed an iridotomy with most excellent results,—with proper glasses the patient is able to follow the ordinary work of a day laborer.*

On June 13, 1895, the man returned to the hospital with an angry looking eye, and as the eye was totally blind I advised its removal. The day following I performed the Mule's operation. He was kept under observation for two weeks, during that time

* Case reported in detail elsewhere.

there was little or no reaction, and at the end of four weeks an artificial eye was adjusted, which is perfect in its movement. When he was last at the hospital his seeing eye was free from irritation.

Case 9. A young man of Philadelphia, age 21, patient of Dr. Ballantine. Ciliary region of the left eye was punctured with the sharp point of a peach stone, upper and out quadrant, thrown by a companion from the second story of an amusement hall. He was taken to a hospital, where for one week the eye was treated. One week after the accident, August 7, 1895, the case came under my care; at this time the eyeball was congested, pupils dilated (mydriatic), yellowish reflex from fundus, showing inflammatory

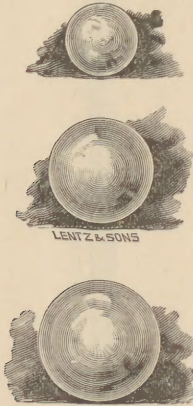


Fig. 3.

cyclitis, eye-ball hard and very painful to the touch; no light perception.

Three days after his admission to the hospital Mule's operation was performed. After the abscission of the cornea I proceeded next to remove the infiltrated vitreous. The ciliary bodies were covered with pus—the same condition existed in the choroid. The vitreous and retina were not recognizable, both being nothing but a purulent mass. As this was the first case of the kind, I took unusual precaution to cleanse the scleral cavity perfectly. I proceeded in the usual manner to carry out the technique of the operation, until I came to stitching the sclerotic—thinking that probably the catgut, which I used on the two prior operations was not up to the standard, I used a different strand, which had been

especially prepared for this septic case; I could not but feel that silk sutures in a case like this might harbor germs, and at some time break out into an inflammatory condition.

The patient remained in the hospital twelve days; very little or no reaction took place, only slight edema of the conjunctiva and orbital tissue. The upper eyelid was somewhat puffed and swollen from the first to the fourth day, after this the swollen condition disappeared.

The patient went to Atlantic City. On the second or third day at this place, while walking along the boardwalk, he suddenly turned his head to the left and immediately felt something give way in his eye. On August 23, the next day after the accident happened, he came to see me. The glass ball was exposed. I tried to bring the parts together with catgut sutures again, and succeeded, but the parts would not hold, and on August 31 I removed the globe, cavity closed, and on September 10 an artificial eye was inserted, which has been worn with comfort ever since.

This was the third case in which catgut sutures were used and a third failure must be recorded.

Case 10. Thomas Marsh, of Chester, Pa., age 47, was brought to the hospital by Dr. S. H. Neal, September 13, 1895. While at work in the morning between 7.30 and 8 o'clock he was struck in the eye by a splinter of steel, cutting the eyeball open from the ciliary region on the nasal side to the temporal side, directly through the upper third of the cornea, causing a gaping wound. There was loss of lens and vitreous, and the eyeball had collapsed. The patient came to the hospital, and at 1 o'clock an evisceration of the eyeball was performed. The case followed the usual course of recovery and was given an artificial eye to wear on October 25. The eyeball is perfect in its movements and the conjunctiva is firmly united. Black silk sutures were used in this case.

Case 11. William Simpson, of Philadelphia, age 52, referred by Dr. Saltmarsh. Far-sighted for many years, and for the last seven years obliged to wear glasses for dis-

tant vision—spherical plus. On April 1, 1895, he noticed an inflammation of the eye and consulted an ophthalmic surgeon, who discovered in connection with slight ciliary congestion a detachment of the retina, possibly due to an injury (recalled having been struck in the eye with a clothes-line) and after three weeks' treatment it was pronounced better with retina again attached. In a few weeks had another attack, even worse than the first, and found that the sight had gradually disappeared until the eye was totally blind, and very hard and painful. On October 2, 1895, the patient came under my care at the Medico-Chirurgical Hospital suffering greatly from an attack of glaucoma. Tension and eyeball very much congested. The cornea was hazy, pupil dilated and a faint white reflex from the fundus by oblique illumination. It could not be determined positively whether we had a growth to deal with or a new formed tissue following complete detachment of the retina. The patient could not make up his mind to have the eyeball removed without a still further trial of internal treatment. The futility of the treatment become more patent to the patient from day to day. On October 19, 1895, an evisceration was performed with the usual precautions. Upon removing the cornea and taking out the contents of the eye-ball I found a fibrous mass of tissue, which contained in its centre a spicula of bone, evidently starting from the cells of the choroid. Black silk sutures used in sclerotic and conjunctiva. The conjunctival stitches were removed on Monday, November 2. The patient has made an excellent recovery.

Since the failure of three cases which I attribute to the too rapid absorption of the catgut sutures, thereby allowing the sclerotic coat to open and the conjunctiva, not being able to resist the evident pushing forward of the glass globe by the contraction of the sclerotic coat from behind, I have gone back to silk sutures. I have also given up using absorbent cotton to pack the sclerotic cavity, but use immediately after the evisceration sterilized gauze. After the packing, the blood which oozes from the central artery is taken up by the gauze, which expands and thus exercises enough

pressure to stop all hemorrhages, leaving the scleral cavity perfectly dry. I deem this a great improvement over the original operation.

The details of the operation are carried out under ether, as follows: The eye is thoroughly irrigated with a lotion, which I call formula No. 1, to designate it from almost the same formula for sterilizing instruments.

FORMULA I. IRRIGATING FLUID.

Hydrarg. bichlor.....	1-50 grain.
Zinci sulphocarbolicis.....	30 grains.
Aq. menth. ptp.....	2 drachms.
Aq. camph.....	
Aq. destil., of each.....	2 ounces.
M. ft. sol.	

The same formula is used for instruments without the hydrargyrum.

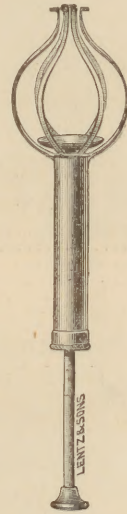


Fig. 4.

The eyelids are separated with the ophthalmostat. The conjunctiva is dissected from its corneo-scleral attachment back to about the equator of the eyeball, the muscles also separated; then the cornea is excised—this is best done with a large Beer knife, as if performing a flap operation for cataract—the lower half of the cornea is removed with curved scissors, and the contents of the globe are taken out with a small scoop. (Fig. 1.) devised for the purpose.

Great care is necessary to remove the ciliary bodies and choroid and the head of the optic nerve, leaving a clean white sclera. Mr. Carter has devised a rubber bulb (Fig. 2) which is inserted into the scleral cavity and inflated with air to produce pressure

on the central artery to prevent hemorrhage. As this application has not been a success with me I pack the scleral cavity with sterilized gauze. After waiting a few minutes this is removed, and the contents of the scleral cavity are again thoroughly irrigated with antiseptic fluid and again packed. A sterilized glass globe (Fig. 3), which is best suited to the case, is then inserted with a specially devised instrument (Fig. 4). The sclera is split vertically so that the edges may be drawn together and held by stitches of No. 4 black silk, using large needles, completely hiding the glass ball. The orbit is again thoroughly irrigated with the hot solution, and the socket packed with sterilized cotton, saturated with lotion No. 3, and this dressing is kept wet day and night for twenty-four hours, when the eye is bathed with hot water and fresh dressings again applied and continuously saturated with the lotion, over which is bound a sterilized bandage.

FORMULA.

Liq. plumbi subacetatis.....2 drachms.
 Tinct. opil.....
 Tinct. belladon., of each....1½ drachms.
 Tinct. arnicæ.....1 ounce.
 Aq. camph.....
 Aq. destil., of each, q. s....ad 4 ounces.

At the end of the twenty-four hours the upper eyelid is somewhat swollen, puffy

and edematous, but the tumefaction gradually disappears. As a rule the conjunctival sutures are not removed under six or ten days. It is important that both eyes are kept bandaged for at least six days. By allowing the liberty of one, too much rotation of the eye is permitted, and as a sequence the antagonistic muscles of the operated eye pull apart and there is greater pressure brought against the sutures, which are liable to be torn out—a probable cause in cases of No. 5, 6 and 9.

From the large number of operations now under observation, and no unfavorable ones reported, it may be considered a very safe one, and if we have in evisceration a method equally as safe as in enucleation, why not give the patient the advantage of the much improved appearance of the artificial eye?

The patients were operated upon at the Medico-Chirurgical Hospital, and the best attention given them, as to the carrying out of the treatment by the house surgeons and nurses. The accompanying photographs show the result of the operations as they appear at present writing.

(Charles Lentz & Sons have succeeded in making the special instruments required for this operation).



Case 3.



Case 4.



Case 5.



Case 7.



Case 8.



Case 9.



Case 10.



Case 11.

